The Foot of James Parrott

2

AFTER

1

BEFORE THE OPERATION

The Foot of Miss Drew

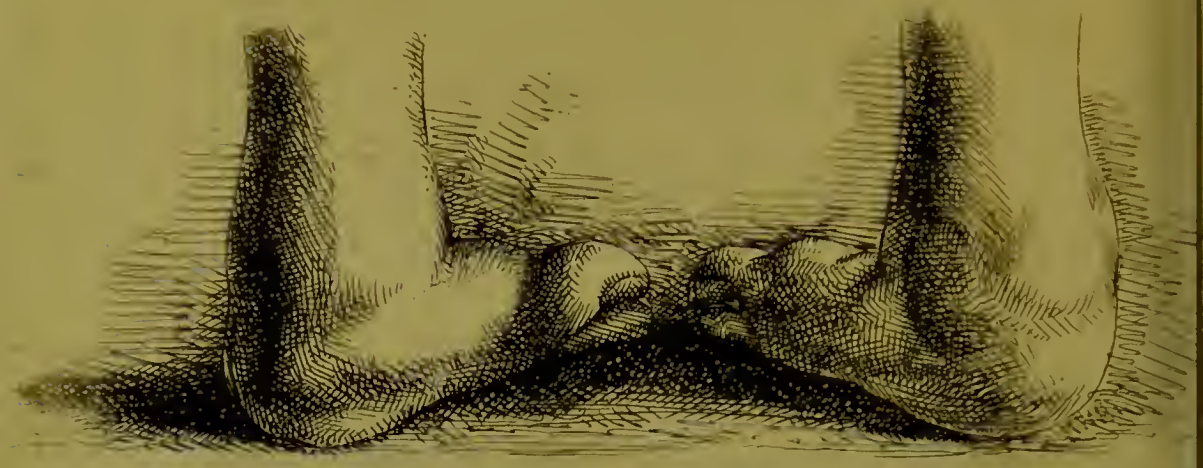
3

DURING THE OPERATION

4

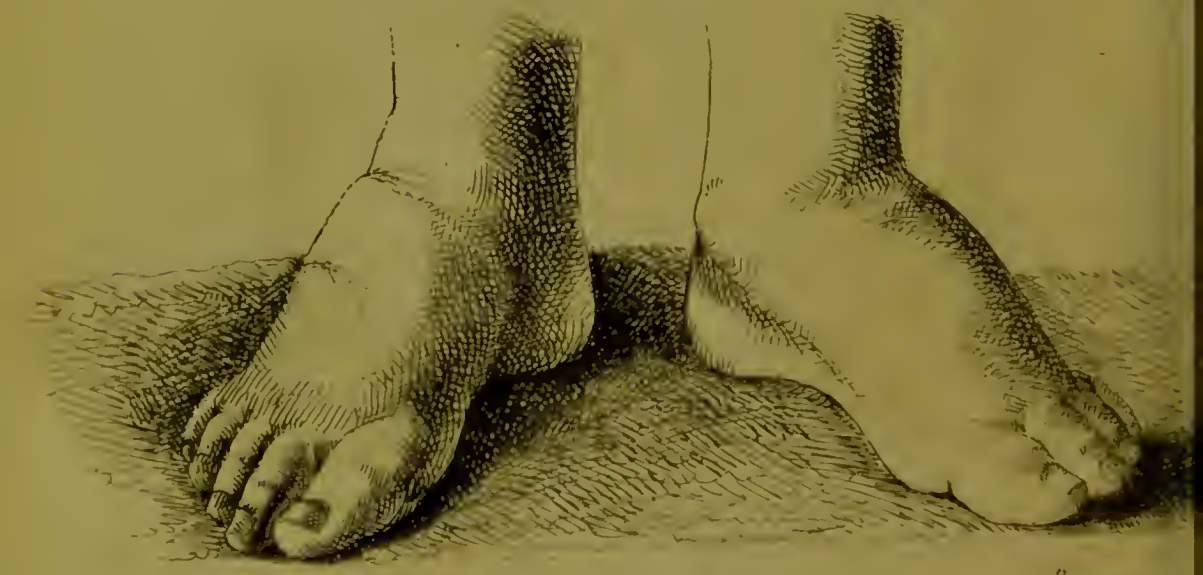
AFTER

The Feet of Thos. Vivian before the operation



1 FRONT VIEW 2

3 BACK VIEW 4



5 6

The same Feet after the operation

The Foot of Miss S. before the operation.

1 2

FRONT VIEW SIDE VIEW

The same Foot after the operation.

3 4

FRONT VIEW SIDE VIEW

PRACTICAL OBSERVATIONS

ON THE

NATURE AND TREATMENT

OF

TALIPES, OR CLUB-FOOT;

PARTICULARLY OF

TALIPES VARUS.

BY

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To Sir Astley Cooper, Bart., G.C.H.

AS AN

HUMBLE AND SINCERE TRIBUTE

TO THOSE TALENTS

WHICH HAVE SHED SO MUCH LUSTRE

UPON THE

SURGICAL DEPARTMENT

OF THE

PROFESSION:

THIS LITTLE ESSAY IS DEDICATED

BY HIS

SINCERE AND GRATEFUL FRIEND,

THE AUTHOR.

Salisbury, Feb. 17, 1840.

INTRODUCTION.

In offering to the notice of the profession the following observations on the nature of Talipes varus, and on its treatment by division of the plantar fascia, I am quite aware that I am not proposing an entirely new operation, although when I first performed it, four months since, I was not aware that it had already been done once by Stromeyer.

Since writing the above, I have read in the British and Foreign Medical Review, that the celebrated Dieffenbach has occa-

sionally performed it; still, as this fact does not interfere with my view of the nature of Talipes varus, which appears the most important part of my unpretending essay, I have not been prevented placing it before the professional public.

To the first of these authors belongs, of course, priority of discovery; but he has either abandoned it in favour of the section of the tibiales antici and postici muscles, or thinks it applicable only to certain cases of Talipes varus. Whatever is original in the following pages will be found in the view I have taken of the proximate cause of this deformity, and of its treatment by division of this fascia, in all severe cases, or where that inclination of the anterior part of the foot inwards, constituting the species termed Varus, remains after the section of the tendo Achillis; believing, as I do, that this operation would supersede in all cases the division

of the tibial muscles, and, moreover, as I think is proved by the cases I shall presently detail, would render the cure more rapid, the operations less numerous, and the application of instruments infinitely less painful. If the manner of this little essay be crude, I trust that my readers will attribute some part of the fault to my anxiety to place at the disposal of the profession, as early as possible, what appears to me an important circumstance in the treatment of this deformity.

My views are illustrated by cases, and by etchings executed by my friend, Mr. D. C. Read, of the Close, Salisbury, to whose talent and kindness I have been frequently indebted.

That we owe much to the labours of Stromeyer, Dieffenbach, Whipple, and Little, must appear evident to all who have had access to their works, and I own that in offering a view of the proximate cause of

Talipes varus so different from that assigned by these high authorities, I find their importance render me diffident; but as Truth, not Victory, is my object, should I be convinced of error, I shall most readily acknowledge it, and they will, I feel assured, be among the first to give me credit for honesty of motive.

TALIPES VARUS.

I was led by the following case to consider the influence of the plantar fascia, in the production of that rotation inwards of the toes, and anterior parts of the foot, which confers on this species of Talipes the designation of varus.

Jan. 16, 1839, Charles Clarke, aged 4 years, a native of Odstock, near Salisbury, a labourer's son, is affected with Talipes varus congenitus of both feet. He walks on the integuments covering the outer surface of the metatarsal bones of the fifth toes, at which part of each foot is deposited a thick padding of hardened cuticle. The

anterior parts of the feet are rotated inwards to such a degree that, in walking, the toes of one foot are carried over those of the other; and the heels are barely an eighth of an inch from the ground in the erect posture. He cannot, by any effort of his own, tread on the soles of his feet, nor can I, by the exertion of considerable force, diminish the convexity of the tarsal arch, which is very prominent. At the time of making the effort, the plantar fascia can be felt tightly strained from the inner and inferior part of the os calcis to the toes in general, but more particularly to the fifth.

No efforts have been made to improve his condition.—At first sight it appeared to me that, as the heels so nearly touched the ground, the division of the tendines Achillis would answer no good purpose; but on recalling to my mind the anatomy of the plantar

fascia, and its connections with the os calcis, tendo Achillis, plantaris muscle, and metatarsal bones, I came to a different conclusion; dissection and patient examination of these deformities have strengthened me in my last view of the subject.

Dissection gives the following results:— That part of the plantar fascia with which we have to do, called by anatomists the middle portion, arising by a narrow band from the inner and inferior part of the os calcis, runs forwards expanding laterally and diminishing in density to about the middle of the sole, a little anterior to which it divides into three portions; the middle and broadest is again divided into three slips, which separate to be distributed to the three middle toes: a distinct band runs to the great toe, and another, the most external, takes a curved direction to the fifth, to which it is distributed. Each tendinous band

divides opposite, or nearly so, to the articulation formed by the distal end of the metatarsal bone, with the proximal end of the first phalanx, into two tendinous slips, which go to be inserted into the extremity of the metatarsal bone, lateral ligaments and sheath of the flexon tendons of their respective toe. The different bands are connected by numerous cross fibres passing from one to the other.

The physiology of this portion of the plantar fascia is evident. Extending from the os calcis to the distal ends of the metatarsal bones, it acts towards the arch of the foot, the same part that the string does to the archer's bow when strung, rendering it rigid, and by assisting the wedge-shaped bones of the tarsus, materially strengthens its arch.

When the gastrocnemius, soleus and plantaris muscles contract, they become

through the medium of this fascia flexors of the toes, and from its oblique direction from within will tend to turn the sole of the foot inwards, and enable a person to stand on the ball of the little toe, to which position, it may be observed, there is an instinctive inclination when we raise our heels to stand on our toes. The fibres of the plantaris tendon distributed to the fascia will act especially in this way.—Its pathology in Talipes varus corresponds with its physiology as given above.

The tendons of the gastrocnemius, soleus and plantaris muscles being contacted in length, and the posterior protuberance of the os calcis raised above its normal position, the posterior attachment of the fascia to the os calcis will be raised also, the arch of the tarsus will be increased, the distal extremities of the metatarsal bones, more particularly that of the

fifth, will be drawn downwards, and obliquely inwards towards the inner part of the inferior surface of the os calcis. If the elevation of the heel be moderate, and no effort be made to remedy the defect by instruments, the patient will walk with pain on the integument covering the distal extremity of the fifth metatarsal bone, as in Barrett's case. See plate 1, fig. 1.

If the contraction of these muscles be extreme, the anterior part of the foot will be drawn first downwards and inwards, and then upwards and backwards, towards the heel, and the patient will then walk on the instep, as did Thomas Vivian. See plate 2, figs. 1 and 2.

If instruments have been applied with a view of obviating the rotation inwards of the foot, the heel will remain raised, and the patient will, perhaps, be enabled to walk on

the integument covering the distal extremities of all the metatarsal bones; but if the principal effort has been to bring down the heel, the plantar fascia will be rendered tense, and the foot rotated inwards, as the tendo Achillis has, in this instance, been lengthened at the expense of the fascia. This was the case in Miss Drew. See plate 1, fig. 3. I have seen a cast of that young lady's foot at a very early age; at which period the deformity resembled that represented in plate 2, figs. 1 and 2. Instruments converted it to the state represented, plate 1, fig. 3.

From these facts I concluded that the inversion of the anterior part of the foot, and convexity of the tarsal arch in Charles Clarke's case arose from his trying instinctively to place the heels in contact with the ground; as a consequence, he was thrown on the outside of the foot, the tarsi became very

convex, and the anterior parts of the feet rotated inwards.

Hence I hoped that if the tendines Achillis were divided, the difficulty would be removed. Accordingly, on Jan. 19, 1839, I divided both tendons. The result fully bore out my conjectures. The bones of the tarsi became loose and the foot so altered that I could, immediately after the operation, place the sole flat on the foot-piece of a tin splint without difficulty; and although at that time I knew not of the existence of Stromeyer's foot-board, or Scarpas's boot, and the parents of the boy could not, from want of capacity, assist me, the case went on uninterruptedly, and he is now quite well. This was as pure a case of Talipes varus as could possibly be. If the rotation of the toes inwards had arisen from contraction of the tibiales antici or postici muscles, the section of the ten-

dines Achillis could not have produced the result described above.

In the next case presented to my notice, this fascia equally played its part in the production of the rotation of the foot inwards.

James Barrett, aged eight years, a native of Salisbury, is a delicate boy, suffering every winter from chronic bronchitis. He has dark eyes and hair, and sallow complexion. The mother observed the deformity when he was first placed on his feet.

His heel is rather more than two inches from the ground, which he can touch with the ball of the fifth toe only. He walks with a stick, and but for a short distance without pain. The tarsus is much arched, as may be seen in plate 1. fig. 1. The anterior extremities of the os calcis and astragalus are very prominent. The distal extremities

of all the metatarsal bones protrude considerably at the sole, and the toes are proportionably elevated;—I suppose by the act of progression. The great toe is shorter by a quarter of an inch than the second. The foot is unnaturally wide at that part corresponding to the commencement of the toes. On pressing the anterior part of the foot upwards and outwards, with a view to lessen the deformity, the tendo Achillis and plantar fascia become very prominent. The bones of the tarsus do not form quite so rigid an arch as in Charles Clarke, although the latter is his junior by four years, which may be accounted for by the delicacy of health of James Barrett.

The angle formed by the distal extremities of the metatarsal bones and proximal ends of the first phalanges of the toes, was evidently the result of the tying down, if I may be allowed the expression, of these parts by

the bands of plantar fascia distributed to them. This is, no doubt, increased by pressure in walking. The shortness of the great toe I know not how to account for, but it is interesting to remark, that, after the cure, it became of its normal length.

Since writing the above, I have had an opportunity of seeing this shortness of the great toe much exaggerated in a young lady now under my care, from North Wilts. It has been evidently, in her case, produced by the great angle formed at the joint between the metatarsal bone and the first phalanx, the consequence of the combined action of the portion of the plantar fascia distributed to them, and the pressure in progression. When the toe is brought in a line with the metatarsal bone, the shortness of the latter disappears.

June 13, 1839. — Having placed the patient on a chair in the sitting posture, an

assistant grasped the toes and anterior part of the foot with one hand, the heel with the other, and by flexing the ancle, rendered the tendo Achillis tense. I passed a straight bistoury between the tendon and deep muscles of the leg, about two inches above the prominence of the heel, until the point of the knife pierced the skin of the opposite side, and in the act of withdrawing it, I divided the tendon completely. A distinct snap was heard, and the assistant felt the heel descend. A few drops of blood escaped. The edges of the wound were drawn together by adhesive plaster, and leather splints were applied, in the manner recommended by Dr. Little, on each side of the foot and leg, and retained by adhesive plaster and bandage.

On the third day the wounds had healed. I then applied a modification of Stromeyer's foot-board, and raised the anterior part of the

foot about an eighth of an inch daily, easing it only at night. He never lost his appetite and hardly an hour's rest. At the end of a fortnight the heel was a quarter of an inch below the toes, and he could place the sole flat on the ground without any assistance. I then applied a boot, with straps which buckled across the instep, with a view to keep the heel in contact with the sole of the boot, to which was attached a slight iron having a joint at the instep, which allowed of flexion only of the ancle. He now walks, three months having elapsed since the operation, with his sole flat on the ground ; and the foot has obtained an equal degree of strength and beauty with the other, as may be seen in plate 1, fig. 2.

This view of the part played by the plantar fascia in Talipes varus, appeared the more important to me when I found that Stromeyer attributed the effect to the contraction of the

tibial muscles, and I determined that, should a case occur in which, after dividing the tendo Achillis, I found a difficulty in overcoming the rotation inwards of the anterior part of the foot and anormal convexity of the tarsus, I would divide the plantar fascia as near to its origin as possible. The following extreme case soon afterwards presented itself to my notice. See plate 2.

Thos. Vivian, aged 15, from Soply, near Christchurch, has congenital Talipes varus of both feet. He is of a dark complexion, and stunted in figure, evidently from deficiency in the development of the lower extremities. He walks on the upper part of the insteps. Cushions of hardened cuticle are deposited on the parts which come in contact with the ground. The soles of the feet are directed upwards, outwards, and backwards; the balls of the fifth toes almost touching the heels. The toes, with the anterior parts of

the feet, are directed obliquely backwards and inwards; the surfaces, which in naturally formed feet are uppermost, being in contact with the ground. The prominences of the heels are turned outwards and backwards, and are four fingers' breadth from the ground. A great deficiency of muscle holds in the whole of the lower extremities, particularly at the calves of the legs. The toes are crowded together and drawn towards the heels. The articulating surfaces of the os calcis and cuboid, and of the scapboid and astragalus, are quite separated, and placed parallel to the corresponding articulating surfaces of each other. The feet are very diminutive. On pressing the anterior parts of the feet upwards and outwards, the tendines Achillis and plantar fasciæ are tightly stretched, and some uneasiness is felt in the situation of the latter. The deformity in this boy is so great that his unfortunate parents are ashamed to let him be seen. He can walk two

or three miles, but suffers much fatigue and pain afterwards, and from frequent ulcerations on the parts which are in contact with the ground. When he puts on his shoes, the feet seem to be simply turned round, the heels occupying the situation of the toes, and the toes of the heels. The bones of the tarsus have but little motion on each other.

After examining the feet of this boy, I was far from sanguine as to the result to be expected from the operation ; but the fact of his being a labourer's son, whose bread would depend upon agricultural labour, and the knowledge that I should have nature to assist me in remedying that which she most abhors, deformity, determined me, the boy being most desirous, to make an effort to relieve him ; and although I met with unlooked for difficulties, I eventually succeeded.

On Sept. 1, 1839, I divided the tendo Achillis in the right lower extremity, pursu-

ing the same method as in James Barrett's case. The same after-treatment was applied.

Sept. 2. He has felt some very slight spasmodic pain in the muscular part of the gastrocnemius, but has slept well. Is otherwise quite well.

Sept. 3. Is quite well in every respect. The wound is not healed; there appears a disposition to granulate.

Sept. 8. Still continues in good health. The wound is almost closed. On this day I divided the tendo Achillis in the left extremity.

Sept. 9. The incision in the right leg has healed. I applied Stromeyer's foot-board, as figured in Dr. Little's work.

Sept. 12. The foot is somewhat improved, but I find two great difficulties; one in

keeping the foot in the instrument from its great tendency to rotation inwards: the other from the patient slyly letting loose the straps. I applied to-day a well padded strap, of the kind recommended in Dr. Little's work, and figured page 184, for the purpose of keeping the toes out, with another, the pad of which was adapted to the convexity of the tarsus, the ends being fixed to a spring placed at the inside of the foot-board, this spring acting in a direction corresponding to the axis of the tarsal arch. This retains the foot more completely in the instrument. Still much difficulty exists. I have now an experienced nurse with him.

Sept. 17. He continues quite well in general health. The feet improve slowly. He complains of much pain in the sole and at the upper part of the tarsus, also at the ball of the little toe.

Sept. 18. I divided to-day the plantar fascia in the right foot, after the following manner :—The toes being pressed obliquely upwards and outwards, and the fascia put upon the stretch, I passed a straight narrow knife between it and the skin as near to its origin as possible. I then with a curved probe-pointed bistoury divided the fascia completely. A few drops of blood escaped. The assistant felt the convexity of the tarsal arch diminish immediately, but without any jerk or audible snap, and the patient cried out, joyfully, that the foot was, as he expressed it, " let loose ;" nor could he believe the operation completed, so slight was the pain. The tarsal arch became more supple immediately after the division of the fascia.

Sept. 19. At the patient's desire I divided the fascia in the other foot, and with the same result.

Sept. 21. I applied to-day Stromeyer's footboard to both extremities, and am delighted to find that the difficulty of keeping the anterior parts of the feet in the instrument is very much diminished. The boy still takes every opportunity of letting loose the straps of the apparatus.

Sept. 25. Very great improvement has taken place in both feet. The right is almost at right angles with the leg and the left nearly as much advanced. I now confidently hope that the cure will be soon complete.

Sept. 27. Considerable swelling of both feet has occurred without apparent cause, with a species of local erysipelas which, though not alarming, would render the continuance of instruments imprudent.

Sept. 30. A few vesicles have appeared on the dorsum of the foot. There is no constitutional disturbance.

Oct. 3. The vesicles have burst, leaving several superficial ulcerations. These are dressed with the zinc ointment. The boy's health continues excellent.

Oct. 25. The ulcerations having healed, I re-applied instruments to the left foot with great tenderness.

Oct. 29. Although the extension has been applied with great gentleness only for a few minutes daily, vesication and superficial sloughing have recurred in the integuments covering the distal extremity of the fifth metatarsal bone. Notwithstanding this, the advance had been so great that I applied lint around the sloughing part, so as to take off pressure from it, and continued gentle

extension. I was rewarded by having the foot at right angles with the leg on the 6th of November, twelve days after the re-application of the extension. By this time the small slough had separated, and I applied a boot with straps, to retain the sole of the foot in contact with that of the boot, and an iron bar fastened by a strap, well padded, encircling the leg below the knee, the iron having a joint opposite the ancle, which allowed of flexion of the foot, but no extension.

Nov. 6. I applied to-day Stromeyer's footboard to the right extremity.

Nov. 7. He has felt, during extension, considerable pain in the muscular part of the gastrocnemius, and vesication is occurring at the same spot as in the other foot. Under these circumstances I have determined to divide the tendo Achillis again when the

foot shall have become capable of suffering the necessary pressure.

Dec. 6. The heel of the right foot is now two inches and a half from the ground. I divided to-day the tendo Achillis. There flowed more blood than in the previous section, which circumstance I attributed to the increased size of the vessels around the cicatrix in the tendon, resulting from the former operation.

Dec. 10. I applied the footboard.

Dec. 14. The heel has descended an inch. There is slight vesication of the integument covering the distal end of the fifth metatarsal bone. Having surrounded this part by pads of lint, I continued the extension.

Dec. 24. The foot is at right angles with the leg.

Dec. 25, I applied a boot and iron similar to that described above.

Jan. 4, 1840. Unfortunately, the instrument-maker made that part of the iron which is fixed to the sole of the boot too slight, which error, by allowing the toes to be rotated inwards, drove us back for four days to the footboard.

Jan. 8. He is now in his boot again, and doing well.

Jan. 14. Walks two miles with ease, and the calves of the legs have increased two inches in circumference.

I have described the above case thus at length, because it has been a very instructive one to myself, as showing to me the causes of difficulties and dangers of which I was not previously aware, and with the hope that it may be equally useful to others. I should not have considered myself justified in suppressing any one circumstance, whatever

might be its tendency as regards myself. This case shows also how much may be done by perseverance under the most disadvantageous circumstances.

The result of the division of the plantar fascia was decisive and remarkable. The rapidity with which the parts yielded to extension, and the diminution of pain, was not to me so much a matter of surprise as of pleasure, reflection having led me to expect it. It will be observed that the tarsus of the limb last operated upon is more convex, and that the foot is shorter. The reasons of this are,—First: The recency of operation in the latter; for nothing improves the foot, after it is at right angles with the leg, so much as walking. Secondly: That the left foot has much increased in length (an inch) within the last two months. This has been beautifully expressed by the artist. Indeed, the plates do Mr. Read

infinite credit, both as correct representations of the objects portrayed, and as works of art.

The next case presented the same results in a yet more striking light, as the same misfortunes did not occur :—Miss Drew, aged 11, a native of Winchester, was born with Talipes varus of the left extremity. She is of middle height for her age, of dark complexion and hair, and of delicate fibre, but enjoys excellent health. She has worn instruments of a very heavy kind.

Appearances anterior to the operation :—The heel is an inch-and-a-half from the ground. She walks on two points of the side of the foot, corresponding to the two extremities of the fifth metatarsal bone, at which parts are depositions of hardened cuticle, more particularly at the proximal end, upon which she principally rests in progression. The bones of the tarsus are,

for the age of the patient, unusually rigid in their articulations. The anterior articulating surfaces of the os calcis and astragalus, and the corresponding parts of the cuboid, and scapboid, are very prominent at the outer part of the instep. In walking, she first steps on the hard corn-like substance, on the external border of the fifth metatarsal bone; but at the moment that the right foot is raised from the ground, and the weight of the body thrown on the affected extremity, the foot rolls over in such a manner as to bring the outer part of the instep to the ground. This is accompanied by considerable pain, which becomes extreme after walking a short distance. It also renders her lame to the greatest degree. In walking, the extremities of the toes of the deformed foot touch the inside of the other, so great is the degree of rotation inwards. When she is desired to extend the toes, she draws them towards

the internal malleolus, the movement being performed at the joint formed by the astragalus with the scapboid. On attempting to make the foot take its normal shape, the tendo Achillis, and plantar fascia are tightly stretched; the tendons of the tibialis anticus, and of the flexor longus pollicis, are slightly prominent under similar circumstances.

Dec. 1, 1839. I divided the tendo Achillis, and plantar fascia, in the same manner as in Thomas Vivian. The foot became on the instant more supple, and it was easy to place the sole, as regarded its inversion, almost flat on my hand.

Dec. 4, 11 A. M. The wounds have healed. I applied to-day Stromeyer's footboard, as in Thomas Vivian's case, with the further improvement of having the windlass and racket-wheel behind the horizontal board. By this contrivance the patient can walk about the room.

Dec. 4. 10 p.m. I am surprised to find that she can reach with the heel to within an eighth of an inch of the ground.

Dec. 7. The foot is at right angles with the leg. The rotation inwards is fast giving way.

Dec. 14. I put on to-day a boot with a steel spring, similar to that recommended by Dr. Little, but the corn, situated over the proximal end of the fifth metatarsal bone, obliged me to substitute the straight steel bar, similar to that I used in Thos. Vivian's case. She can stand perfectly straight, without any instrument or boot, and can go through the five dancing positions with ease. She can stand without any assistance on the sole of the foot, which has never before come in contact with the ground. Even the ball of the great toe performs its part in sustaining its natural proportion of the

weight of the body. The foot improves daily, the convexity of the tarsus diminishing rapidly as the result of treading on the extremities of the arch.

Observations. I think I may in this case fairly attribute the rapidity of cure and the slight pain in the application of extension to the section of the plantar fascia. If my views on this subject be correct, they lead to a result no less important than the substitution of the division of the plantar fascia for that of the tibiales antici, postici and flexor longus pollicis tendons. That these muscles are contracted in length in Talipes varus, I know, but I believe secondarily, not as the effect of spasm or convulsion, but of the position of the foot for a lengthened period. All the cases I have as yet seen have had, originally, a tendency to the Varus kind. The cases of Talipes equinus seemed to be the result of instruments, or of effort on the

part of the patient in walking. The explanation I have offered of the production of the rotation inwards, appears most anatomically and physiologically rational; for it appears hardly probable that a convulsive affection should attack the gastrocnemius, soleus and tibialis posticus muscles, and leave unaffected the flexor longus digitorum, and the muscles in the sole of the foot, supplied by the same branch of the ischiatic nerve; again, that it should attack the tibialis anticus, leaving unaffected the common extensor of the toes and other muscles at the dorsum of the foot all supplied with nervous power by another branch of the ischiatic,—the anterior tibial. Had the flexor muscles of the foot, or the extensors, been wholly affected, it would have been easily accounted for; but, according to these high authorities, muscles are chosen here and there by the convulsive affection, leaving out others supplied almost by the same nervous twig. The gastroc-

nemius, soleus and plantaris, are so associated, anatomically and physiologically, as to form in function, as it were, one muscle: that they should be affected by the same cause is no more than we should have expected.

In addition, I think it very doubtful whether contraction of the tibial muscles, even with that of the flexor longus pollicis, would produce the inclination conferring on this deformity the term Varus. Indeed, were the flexor longus digitorum contracted, it might produce the effect; but if that were the case, its tendons would, from their size, in the aggregate, offer such resistance to extension as to require division of them in all instances. This is not the case; and from the simple fact that they give way so easily to extension, we may with confidence conclude that their brevity arises from position, not from previous convulsive contraction. A fact

drawn from Dr. Little's work is conclusive to my mind on this point, viz :—That, in many of the cases of Talipes varus, cured by him, the tendo Achillis was alone divided. Now, we may fairly conclude from the extreme difficulty experienced by mechanists in lengthening the tendo Achillis, in Talipes, in the slightest degree by mechanical power; that if the tibialis posticus, tibialis anticus, and flexor longus digitorum, or either of these were shortened, by the same cause, as is the tendo Achillis in Talipes, they would not have yielded to extension so easily as they appear to have done, without being divided.

The cases of Talipes which have been presented to my notice do not appear capable of being attributed to one cause exclusively. Convulsions, during teething, or at any time, produce this deformity ; but there are cases which it would be difficult to prove to belong to this class: thus, it was congenital in C. Clarke, and all the family are remarkable for

turning in their toes in an unnatural manner, from the father down to the youngest of five children. In another case, in which I was consulted, the deformity occurred in father and child, and in both was congenital. It is not probable that intra-uterine convulsions had occurred both to father and child in the second case; still less so, in the father and five children, in the first.

The loss of power in the flexors of the foot and extensors of the toes in Talipes, appears to arise not from paralysis, but from a want of healthy exercise, the result of a state of constant extension; for in those cases in which I have operated, their powers have returned on the heel arriving at the ground—an opportunity being thus afforded to these muscles of performing their functions. I cannot doubt but that Stromeyer and Dr. Little have seen advantage derived from the section of the tibial tendons, and I can easily

imagine, that in some cases, they, being contracted, might offer some resistance to the replacement; but I sincerely believe that were the tendo Achillis and plantar fascia divided in all cases of severe Talipes varus, after the age of ten years, the other tendons would, as a general rule, yield as easily to gradual force as did the tendo Achillis in the case of contracted knee-joint, so ably treated by Dr. Little, and related at page 266 of his work.

Dr. Little, speaks highly of the division of the tendon of the flexor longus pollicis, in those cases where the great toe presses unpleasantly upon the round; but it is worthy of remark, that, in dividing this tendon at the point he describes, he probably divided that portion of the plantar fascia distributed to the great toe.

I cannot refrain from observing that in none

of the cases operated upon by others or by myself, has the so much dreaded tetanus or trismus occurred. Does it not from this fact appear probable that in the cases in which these affections took place, they were attributable to the wounding of nerves rather than of tendons? Analogy and facts alike support this view of the matter.

I have observed in all the cases of Talipes varus in which I have operated, that the rotation inwards of the anterior part of the foot has been remedied in proportion to the extent to which the heel has descended, and that much more has been done in getting rid of the inversion after the foot has passed beyond the right angle with the leg, than previous to its having reached that point. I attribute this effect to the circumstance of the ancle-joint being so anatomically constructed, that extension is accompanied by rotation inwards, and flexion by rotation outwards. Any

person doubting this fact, may prove it by bending and extending the foot upon the leg and observing the effect produced. From this it will appear evident that, in all cases of Talipes, but more particularly in those of the Varus kind, the greater the degree of flexion produced the more perfect will be the cure. I have lately had an opportunity of seeing that it is very possible to bring the heel a considerable distance below the toes, and I have witnessed the great advantage derived from such treatment in the following case :—

Jan. 12, 1840. Miss P——, of Chippenham, North Wilts, is afflicted with Talipes of the right lower extremity. It occurred at the age of three years, without any apparent cause or derangement of the general health. From the father's description, it must have originally resembled Miss Drew's foot, represented plate 1, fig. 3. It has been brought to its

present state by instruments. The heel is two inches from the ground. She walks with pain, and by the aid of irons, on the integuments covering the distal ends of the metatarsal bones, but more on that of the fifth than of the others. The anterior articulating surfaces of the os calcis and astragalus are very prominent. The great toe overlaps the second toe, and forms a considerable angle with the first metatarsal bone,. There is an unnatural width across the situations of the joints formed by the metatarsal bones with the first phalanges. There is great deficiency of muscle in the whole of the extremity. She is very lame, and after walking a short distance, with or without irons, feels acute and long-continued pain and tenderness. The deformity has been lately increasing, and she suffers much and frequently from chilblains, the result of deficient circulation.

Jan. 13. I divided the tendo Achillis.

Jan. 15. The wound is healed. I applied Stromeyer's footboard.

Jan. 16. The foot is at right angles with the leg.

Jan. 21. The heel is a quarter of an inch below the toes. To-day I put on a boot and iron, somewhat resembling that employed in Barrett's and Vivian's cases, with the addition of a spring, which throws up the anterior part of the foot when raised from the ground in progression.

Feb. 15. The heel can now be brought, by the slightest pressure upon the anterior part of the sole, an inch and a half below the toes. She can, at will, bend the ancle pretty freely. The foot is nearly, or quite equal, to the other in beauty. The calf is increased an inch and a half in circumference. The foot is longer by half an inch, and is much narrower across the toes. The great toe has

resumed its natural situation, and has increased in length. She can walk six miles without the aid of any kind of instrument, and that too without fatigue.

In conclusion, I need not assure my professional brethren, in general, that I have been induced to publish this Essay on Talipes, from a desire to place freely at their disposal views and circumstances which I feel convinced are important. The plain statements of facts, and simple reasonings on them, (the only style of writing applicable to medical or surgical subjects,) will convince them, of this. If there be ought useful to them or their patients, in the foregoing pages, I shall be repaid for my pains; if not, I shall at least have the gratification of knowing that its brevity will prevent much loss of time in its perusal.

New Canal, Salisbury,
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